CLAIMS

What is claimed is:

1. A process for coating at least one of the front and rear facets of semiconductor diodes with antireflection layers consisting of partial layers of minimal residual reflectivity, comprising the steps of:

depositing various coating materials on said facets to form said partial layers, in-situ monitoring at least one laser parameter for determining, on a real time basis, the optimum coating thickness of each of said partial layers for best anti-reflection properties, and terminating the coating procedure for each partial layer when said at least one laser parameter indicates that the optimum thickness of the respective partial layer has been reached.

2. A method according to claim 1, wherein the in-situ monitored laser parameter is compared with a theoretically calculated time behavior of said laser parameter to accurately determine said optimal thickness for terminating the coating procedure.

3. A method according to claim 1, wherein said laser has front and rear facets and the power of the light emitted from at least one of the front and the rear facets is utilized as said laser parameter.

4. A method according to claim 1, wherein said laser has front and rear facets and the quantum efficiency of the light emitted from at least one of the front and rear facets of the laser is utilized as said laser parameter.

5. A method according to claim 1, wherein the wavelength of the light emitted by the laser is utilized as said laser parameter.

6. A method according to claim 1, wherein said laser is a semiconductor laser with a p-n-junction and the electrical voltage at said p-n-junction is used as said laser parameter.

7. A method according to claim 1, wherein said laser has a threshold current which is used as said laser parameter.

8. A method according to claim 1, wherein said process of coating is performed in a receiver and wherein a plurality of semiconductor lasers is disposed in said receiver for concurrent coating of their facets.

9. A method according to claim 8, wherein one of said lasers in said receiver is used as a monitor laser, which is monitored to determine the coating state of all of the lasers in said receiver.

10. A method according to claim 8, wherein the facets of all of said lasers in said receiver are coated together until the coating reaches a certain reference thickness value and then each individual laser is finish-coated for an optimum coating thickness with in-situ monitoring of at least one of said laser parameters.

11. A method according to claim 8, wherein at least one of said lasers in said receiver is fully assembled before it is placed into said receiver.

12. A method according to claim 11, wherein all but said at least one fully assembled laser are placed into said receiver in the form of chips.

13. A method according to claim 11, wherein all but said at least one finish formed laser are placed into said receiver in the form of bars.

14. An apparatus for coating at least one of the front and rear facets of semiconductor laser diodes with an antireflexion layer of minimal rest reflectivity while monitoring, in-situ, at least one of laser parameters including laser light emitted from at least one of the front and rear facets of the laser, the electric voltage at a p-n junction of the laser, the quantum efficiency of the laser light emitted from at least one of the front and rear facet of the laser, and the threshold current of the laser, said apparatus comprising a receiver for containing at least one laser, a coating source disposed in said receiver, a support structure for supporting said lasers to be coated such that said lasers are supported with their facets all at essentially the same distance from said coating source, and at least one shutter supported in said receiver so as to be movable selectively in front of at least one of said lasers to protect it from further coating.

15. An apparatus according to claim 14, wherein said lasers are supported on a support structure forming a magazine by which they can be moved into said receiver.

16. An apparatus according to claim 14, wherein said lasers are arranged in a circle around said coating source.

17. An apparatus according to claim 14, wherein said lasers are arranged along lines disposed at opposite sides equidistantly from a linear coating source.

18. An apparatus according to claim 14, wherein a control unit is provided which monitors the laser parameter of at least one of the lasers disposed in said receiver for the coating of their facets while said at least one laser is electrically operated.

19. An apparatus according to claim 18, wherein said control unit includes at least one of a laser control, a shutter control, a layer thickness and a vacuum control arrangement.

20. An apparatus according to claim 19, wherein said control unit is in communication with said coating source, said laser support and said shutter support structure by at least one of electrical and optical conduits.